FIG. 1a

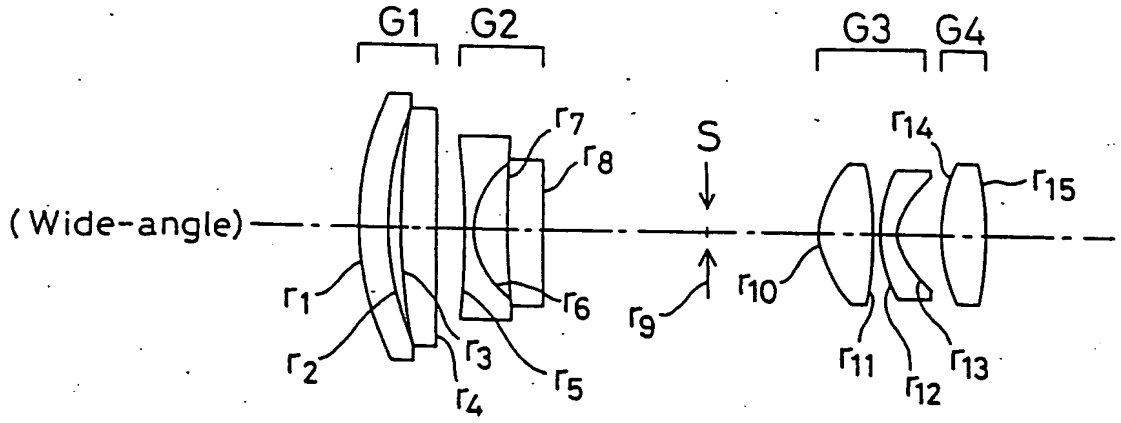

G1
G2
G3
G4
(Wide-angle)
S
r1
r2
r3
r4
r5
r6
r7
r8
r9
r10
r11
r12
r13
r14
r15

FIG. 1b

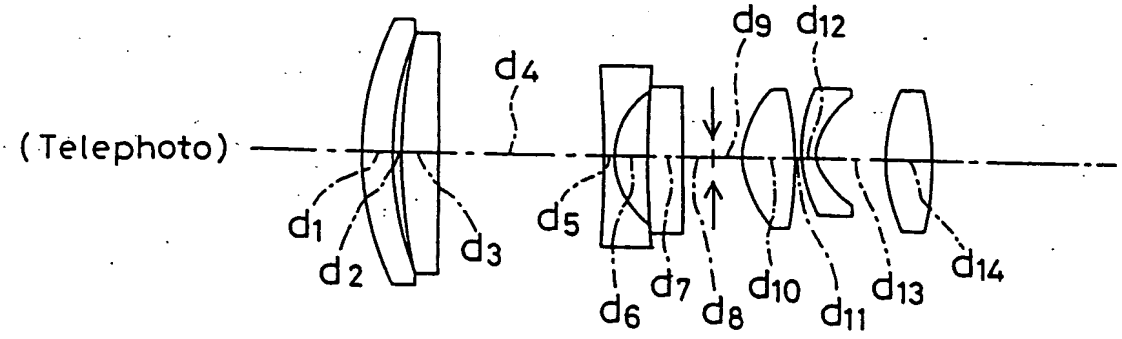

(Telephoto)
d1
d2
d3
d4
d5
d6
d7
d8
d9
d10
d11
d12
d13
d14

FIG. 2a

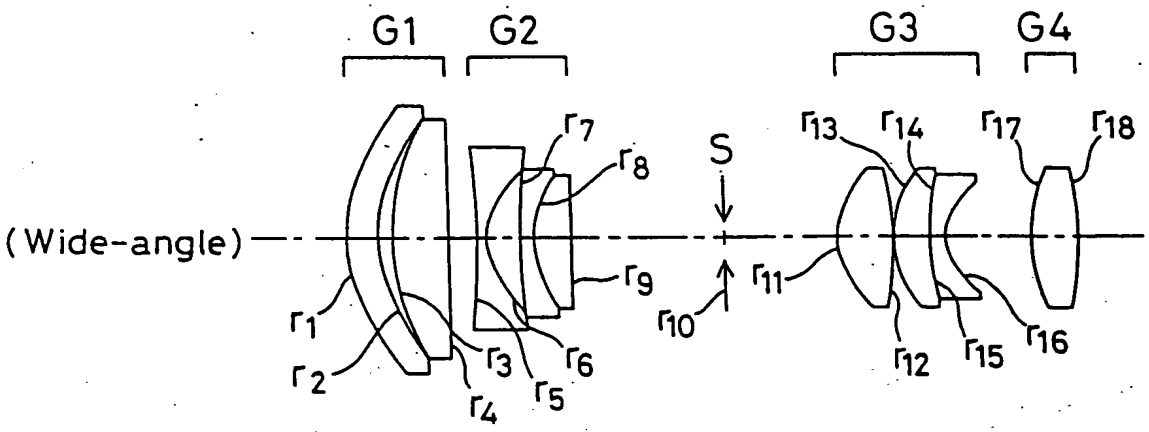

G1
G2
G3
G4
(Wide-angle)
S
r1
r2
r3
r4
r5
r6
r7
r8
r9
r10
r11
r12
r13
r14
r15
r16
r17
r18

FIG. 2b

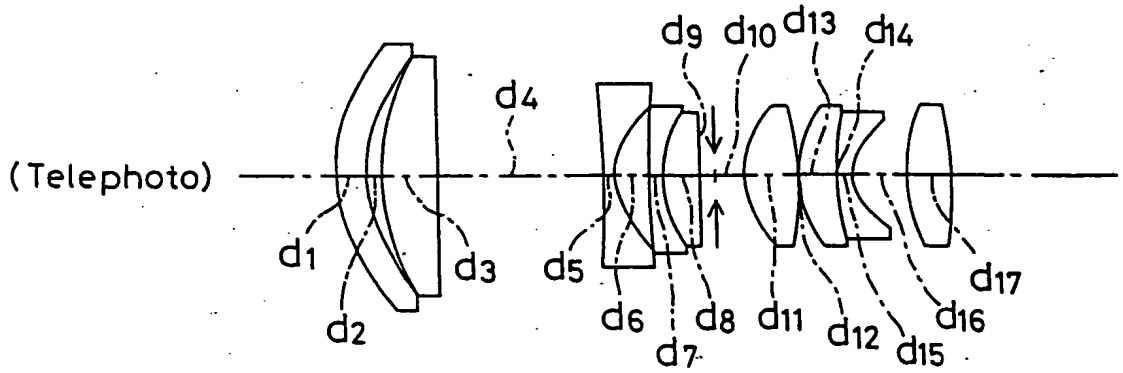

(Telephoto)
d1
d2
d3
d4
d5
d6
d7
d8
d9
d10
d11
d12
d13
d14
d15
d16
d17

FIG. 3a

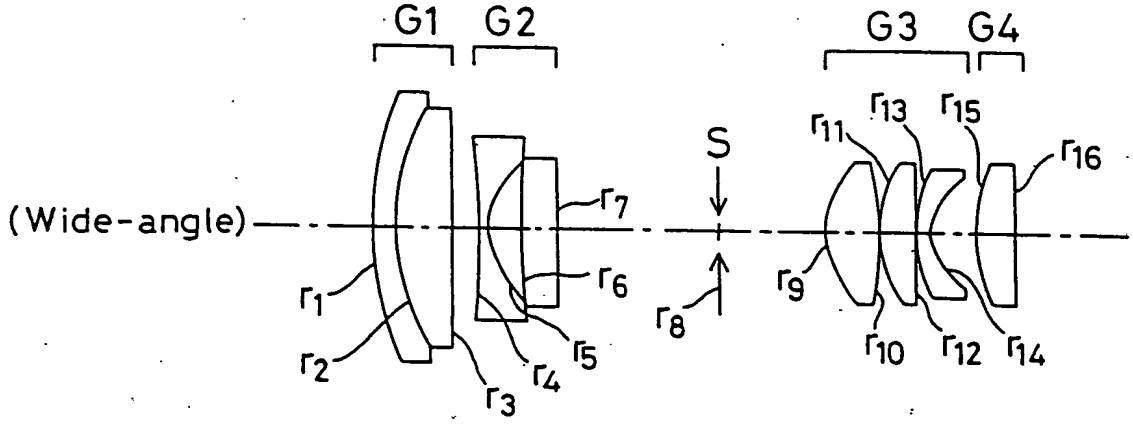

G1
G2
G3
G4
(Wide-angle)
S
r1
r2
r3
r4
r5
r6
r7
r8
r9
r10
r11
r12
r13
r14
r15
r16

FIG. 3b

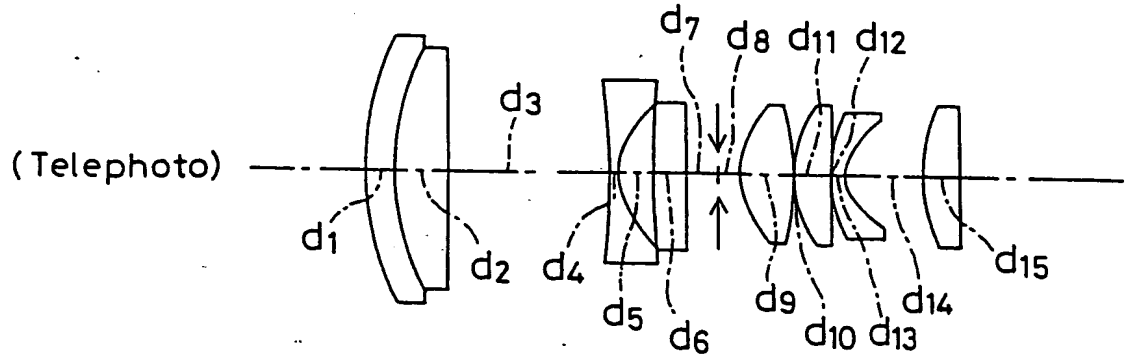

(Telephoto)
d1
d2
d3
d4
d5
d6
d7
d8
d9
d10
d11
d12
d13
d14
d15

FIG. 4a

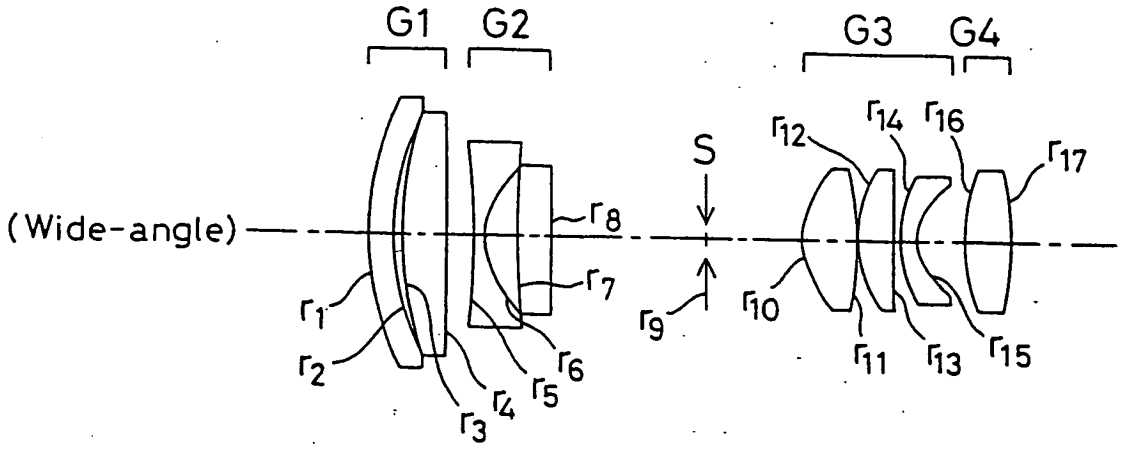

G1
G2
G3
G4
(Wide-angle)
S
r1
r2
r3
r4
r5
r6
r7
r8
r9
r10
r11
r12
r13
r14
r15
r16
r17

FIG. 4b

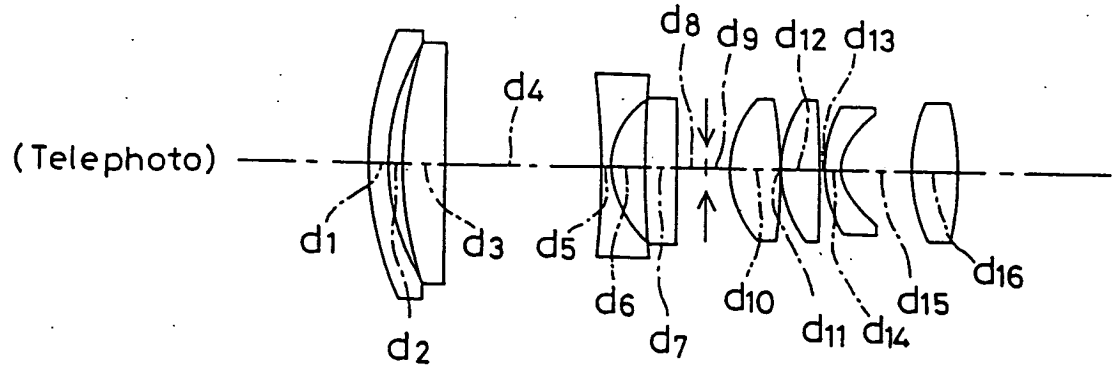

(Telephoto)
d1
d2
d3
d4
d5
d6
d7
d8
d9
d10
d11
d12
d13
d14
d15
d16

FIG. 5a

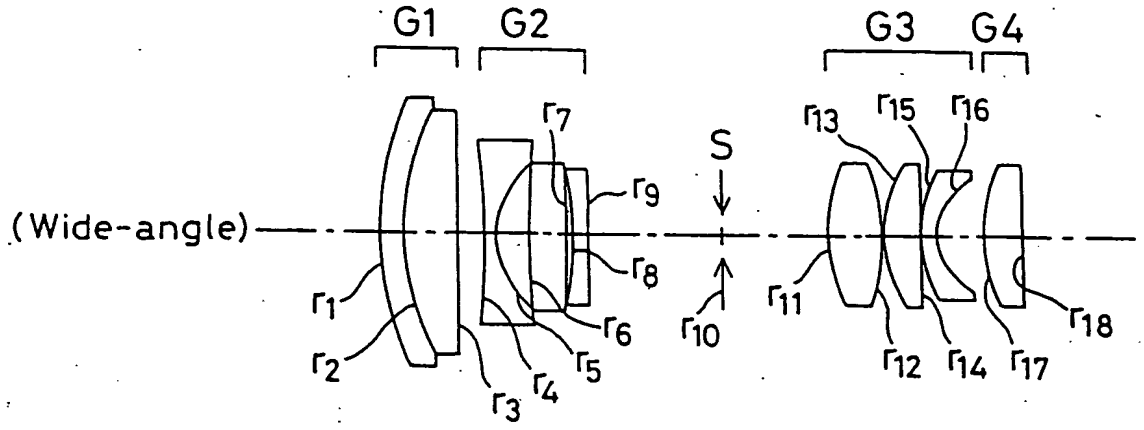

G1
G2
G3
G4
(Wide-angle)
S
r1
r2
r3
r4
r5
r6
r7
r8
r9
r10
r11
r12
r13
r14
r15
r16
r17
r18

FIG. 5b

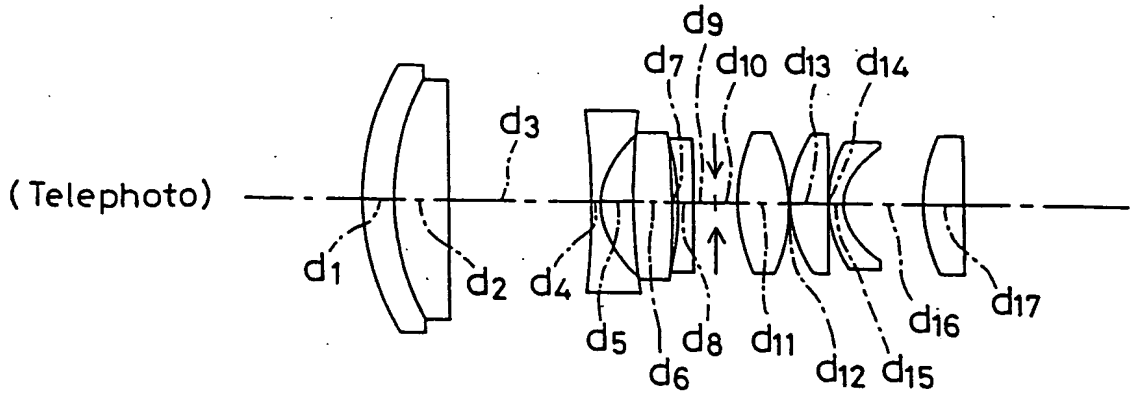

(Telephoto)
d1
d2
d3
d4
d5
d6
d7
d8
d9
d10
d11
d12
d13
d14
d15
d16
d17

FIG. 6a

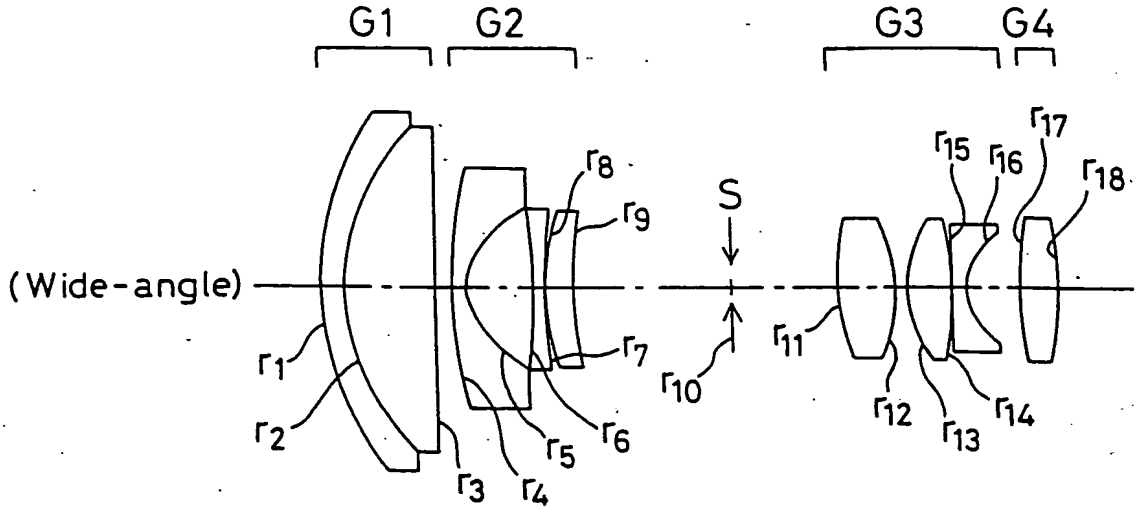
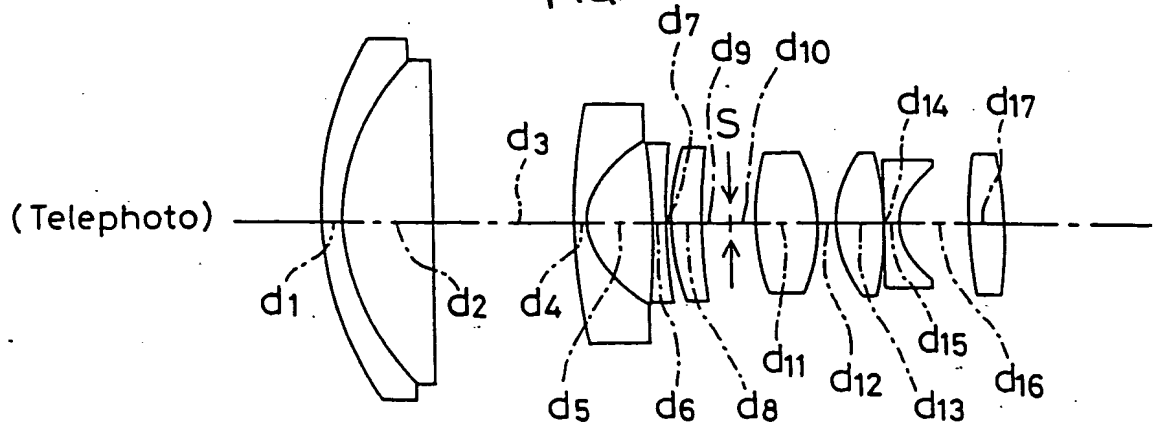
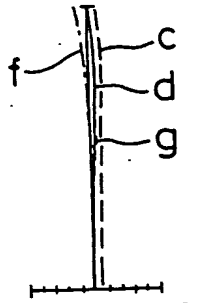

G1
G2
G3
G4
(Wide-angle)
S
r1
r2
r3
r4
r5
r6
r7
r8
r9
r10
r11
r12
r13
r14
r15
r16
r17
r18

FIG. 6b


(Telephoto)
S
d1
d2
d3
d4
d5
d6
d7
d8
d9
d10
d11
d12
d13
d14
d15
d16
d17

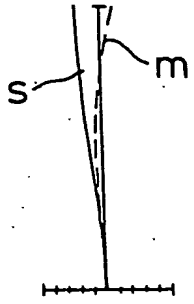
~~FIG. 28~~

FIG. 28a
FNO 4.217



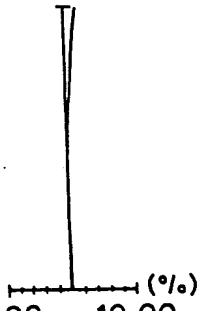

−0.20 0.20
Spherical aberration

FIG. 28b
ω=12.0°



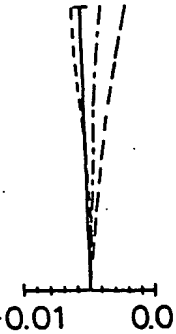

−0.20 0.20
Astigmatism

FIG. 28c
ω=12.0°




−10.00 10.00
Distortion

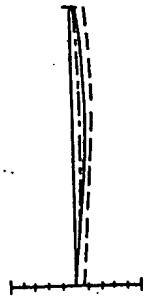
FIG. 28d
ω=12.0°



−0.01 0.01
Chromatic aberration of magnification

~~FIG. 29~~

FIG. 29a
FNO 3.391



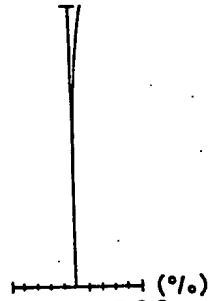
−0.20 0.20
Spherical aberration

FIG. 29b
ω=19.6°



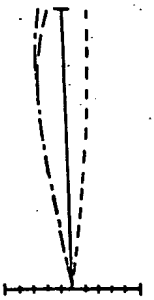
−0.20 0.20
Astigmatism

FIG. 29c
ω=19.6°




−10.00 10.00
Distortion

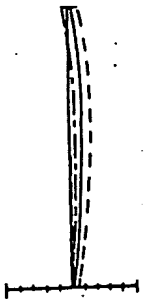
FIG. 29d
ω=19.6°



−0.01 0.01
Chromatic aberration of magnification

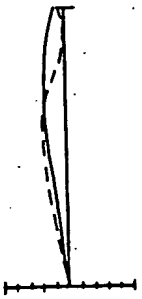
~~FIG. 30~~

FIG. 30a
FNO 2.787



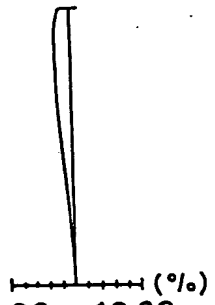
−0.20 0.20
Spherical aberration

FIG. 30b
W = 31.7°



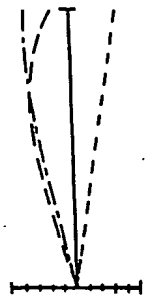
−0.20 0.20
Astigmatism

FIG. 30c
W=31.7°




−10.00 10.00
Distortion

FIG. 30d
W=31.7°



−0.01 0.01
Chromatic aberration of magnification

FIG. 31

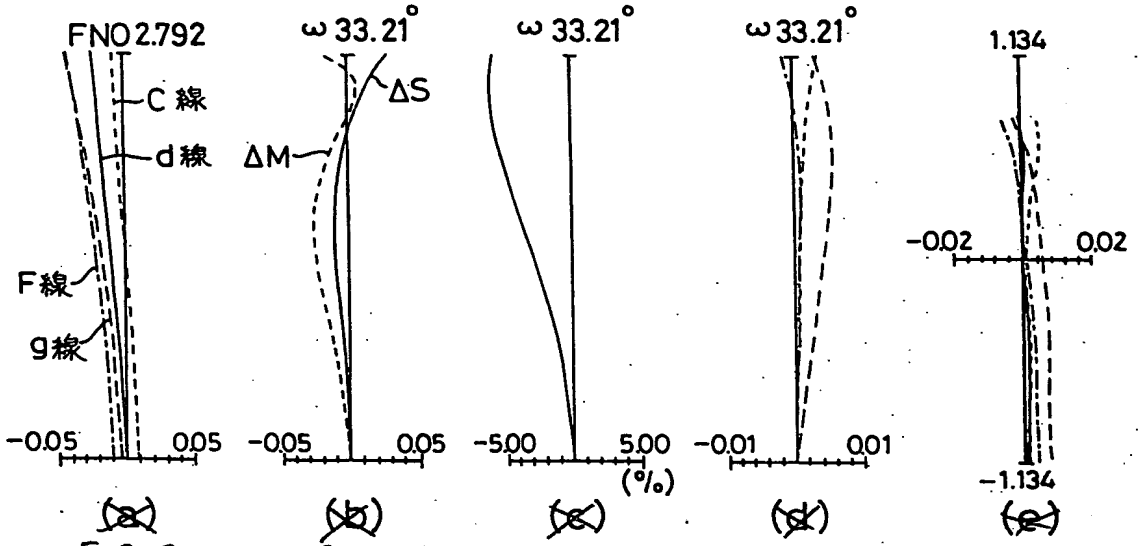



FIG. 31a FIG. 31b FIG. 31c FIG. 31d FIG. 31e

FIG. 32

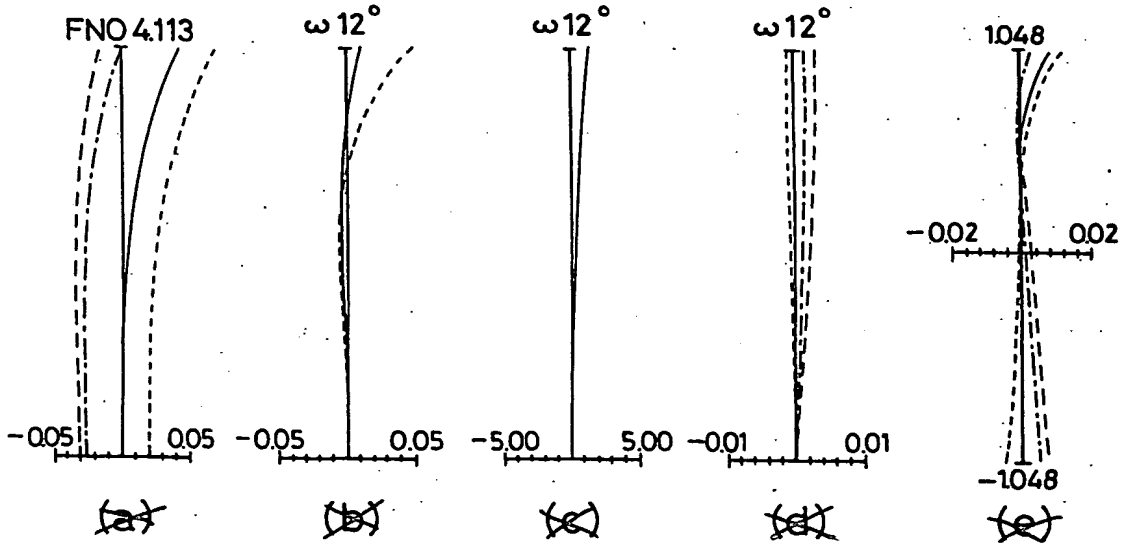



FIG. 32a FIG. 32b FIG. 32c FIG. 32d FIG. 32e